

ABSTRACT

A basic Boolean circuit is a transistor circuit commonly used in industry to produce the logic of a particular Boolean gate. A sequence of standard Boolean circuits disposed along the processing path of an integrated circuit define a predetermined truth table representing the relationship of inputs and outputs of the processing path. A reduced-transistor circuit is generated that is defined by the same truth table as the sequence of standard Boolean logic circuits, but is not definable by a sequence of standard Boolean logic circuits. A processing path of an integrated circuit is programmed with the reduced-transistor circuit instead of the sequence of standard Boolean circuits, thereby reducing the time delay of the processing path and the power consumed by the circuit. The reduced-transistor circuit may be generated in response to receiving a programming instruction defining a sequence of Boolean gates. Alternatively, the reduced-transistor circuit may be selected from a pre-established library storing a plurality of Boolean sequences correlated to a respective plurality of complimentary reduced-transistor circuits.